WATER WITHDRAWAL ASSESSMENT TOOL
WWAT User Feedback

1. **Comment:** I am using Internet Explorer 7.0 with a 15" monitor (at another office) and the Data Layers menu overlaps the GIS Tools menu a bit. I can still see the words "New Withdrawal", but half of it is covered by Data Layers.

   Response: This has been an ongoing problem and has been identified as a screen resolution or internet browser issue. A scroll bar will be added to menu items partially masked in operation.

2. **Comment:** Frankly, I do not understand why we would want to ever consider a large water withdrawal from Michigan. Clearly, politicians are not thinking correctly on this subject.

   Response: This comment expresses an opinion and does not directly relate to operation of the WWAT. Regardless, the WWAT is a major part of the legislation passed to meet Michigan's commitment to the Great Lakes Compact wherein each of the states is required to regulate water withdrawals.

3. **Comment:** When entering new withdrawal information, the "Pumping Frequency" options do not become available until "ground water" is chosen as the source. Pumping frequency options (intermittent) should always be available - I suggest making groundwater the default choice under withdrawal source, if this will activate the Pumping Frequency option initially. Thanks.

   Response: The proposed change for ground water as the default choice was made to the WWAT. Other comments have been taken under advisement.

4. **Comment:** A continuous withdrawal of as low as 0.01 gpm anywhere within the Macatawa Watershed/Macatawa Bay sub-basin results in a Zone D determination. This is not true in the surrounding, similar basins. Is this correct or is there something wrong with some of the model parameters at this location? Thanks.

   Response: In the current version there are some watersheds that have been erroneously assigned a "zero" flow. These watersheds have been identified and will be corrected.

5. **Comment:** The functionality was fine. However, I was unable to get the tool to work (3 tries) without outside assistance because it is not obvious that you have to zoom in on the site to get the new withdrawal screen to come up. There is a lot of peripheral information on the site but no simple step by step on how the user operates the tool. Should be an easy fix. Otherwise looks good.

   Response: The WWAT is under ongoing development and comments of this nature will be given great consideration to improve upon the functionality of the tool.

6. **Comment:** You need some serious step by step instructions so people know what to do when they get to the map screen.

   Response: There are plans to provide additional instructions in the future.

7. **Comment:** Had a few minutes to play with program. A few issues: 1. Need a zoom level selector to avoid having to click map multiple times. 2. Did not recognize some addresses entered into search. 3. Where does this program tell you what zone the well is in? (A,B,C or D) Isn't that the object of this whole thing?

   Response: Additional instruction will be added to assist users not familiar with navigation around a geographic information system (GIS). Users need to activate the "New Withdrawal" button on the left side of the screen and go back to the map and click on a location. Entry screen

would come up requesting a pumping rate and other information necessary to the water withdrawal assessment process.

8. **Comment:** I tried to do an assessment of a property in Kalamazoo County at (address provided). A few comments about my experience... 1. The overview map put the red square in Indiana. 2. This may be a problem with our system, but when I clicked on the New Withdrawal button, my computer slowed to a crawl. I waited approximately 4 minutes for the tool to pop up and then my internet explorer stopped responding. The first few times I didn't think anything was happening at all. Eventually, I watched the green bars at the bottom and they moved very slowly to about half and then stopped. 3. The help button goes to MSU.edu, which didn't help at all.

   Response: Problems such as this one have been identified as an internet browser issue. Work is ongoing to improve the compatibility of the WWAT with the various internet browser versions that are commonly available. Currently, the WWAT works best with Microsoft's most recent version of Internet Explorer.

9. **Comment:** I tried to use GPS coordinates and the site locked up. Are these comments specific to a trial run of the assessment tool or are they disconnected? In several examples on our farm we are in cold transitional streams. In most cases of existing wells and well logs we have at least 20 ft of clay between the surface and the well. Is it really likely that the well at 150 ft affects a 1 ft deep stream above this clay layer? I would like to protest this connection.

   Response: Regarding the use of GPS coordinates and site lock up, there have been various reasons identified for the failure of the site to respond to commands. They are being addressed and fixed as they occur.

   Relative to the "aquifer connection" issue, the model used in assessing stream impact does assume there is a relatively intimate connection between aquifer and stream. DEQ understands this is frequently not the case. However, it must be remembered the WWAT is a screening tool. Where the proposed withdrawal is identified by the WWAT as a Zone C or Zone D withdrawal, the issue of determining the degree of aquifer connection between the withdrawal and adjacent streams would be evaluated as part of the site specific review process.

10. **Comment:** This is my first time using the tool, so I will list the things I had trouble with or comments: 1. remind users to enable pop-ups. Our county system blocks most pop-ups and I had to get permission to enable the pop-ups. 2. In the northeast corner of Monroe County, the watershed is identified as "Menominee". I don't think so. 3. When I click on "New Withdrawl", I get either a hyperlink prompt in little tiny script at the bottom box, or I get a big black area in the bottom box. Where do I enter gpms for a new withdrawl? 4. In Monroe Co, a large withdrawl well could be in the middle of a farm field....no address. Can I pick a random spot on the map? Or do I have to start with a known address. 5. For fun, I entered my home address, and a pick list of 5 identical addresses came up. Same number, same street, same zip. I think this is enough for now. As it stands with me, I cannot identify a site, and I don't know where to enter gpms for a new withdrawal.

    Response: In order of comments, 1) a reminder has been added to disable your pop-up blocker, 2) there are some labeling issues within the maps that are being cleaned up on an ongoing basis, 3) after clicking on "New Withdrawal" you must go and click on the map to activate the water withdrawal assessment process – once activated you would see a place to put in information on the withdrawal, 4) Once you have clicked on New Withdrawal, you can go and click anywhere on the map to begin the water withdrawal assessment process for any location on the map, 5) You have to click on "New Withdrawal" and then go back and click on the map to activate the water withdrawal assessment process.

11. **Comment:** I have used many other GIS applications and this one is by far, the most cumbersome. The individuals that you want to use this tool will become easily frustrated and quit. The overall concept it great, but if you are going to 'require' users to use this site, it needs to be much more user friendly. Here are my suggestions in no particular order: 1. there needs to be a "home" button somewhere after you retrieve the map to get you back to the tool homepage, clicking the back button doesn't work 2. There needs to be directions on how to navigate, most users (farmers, golf course owners, etc.) do not have GIS experience to just 'figure it out' 3. when you click on the GIS Tool 'address' and enter the address, zip code and cross road, it doesn't find the address, however the first time you enter it in the 'locate by address' field, it finds it.

    Response: The DEQ recognizes that many people using the WWAT do not possess the necessary geographic information system skills to efficiently utilize the tool. Development of the WWAT continues with ongoing improvements to make the interface more user friendly. The addition of user directions and additional help tabs/pop-ups is among the improvements being pursued.

12. **Comment:** Here are several more suggestions: 1. the back button in the GIS tools and the one in Internet Explorer do not take you back to the Tool homepage. I keep having to retype the web address to start over. 2. When using the 'address' GIS tool, typing in the cross road actually causes it to not find the address you typed in. If you want a cross road typed in, there should be an example of what it should look like, especially if you want 2 road names entered 3. Help button goes to MSU's homepage? Hopefully, you will have actual help files. 4. The red box/dot on the overview map doesn't correspond to where you are on the big map. 5. Regarding the lat/long, they need to be reversed and allow degrees minutes since most GPS units default to that setting. 6. When you find by lat/long, "%20" should not show up between the lat/long numbers. 7. It would be nice to have city/village names as a data layer to help users find their location easier. 8. If having the wells show up as red dots is for a certain purpose, I recommend having the most recent data set from Wellogic put on there.

    Response: The difficulty with having to start over has been identified - the WWAT is being altered to allow one to go back thru previous screens. Many of the other comments are being addressed in ongoing edits and improvements to the WWAT including the development of help pages, reversal of longitude and latitude on the input screens, etc. The “red dots” represent a quality controlled subset of wells found in Wellogic and are provided for general information.

13. **Comment:** If you enter a latitude/longitude on the main screen to find your location, the mapping service opens in a new window. If you use the County search, it opens in the same window. This needs to be consistent throughout the program. The best thing is probably to always have it open in a new window so that users can easily get back to the main search screen.

    Response: Comment taken under advisement

14. **Comment:** Will there be a place on the tool website (maybe under educational material) for users to refer to the 11 stream habitat types with an explanation of each, the characteristic and thriving fish population lists for each one, and also the fish curves that accompany them?

    Response: A description of the 11 stream habitat types is under development and will be included within the educational/informational link in the WWAT.

15. **Comment**: I have run the tool in some areas around Birmingham and Troy. In Birmingham if you go to the area around Woodward and Maple road which is the middle of town I ran the tool at 1 GPM with a well depth range 200-250 and intermediate. I get a dead read zone. All the way to the right. Same result in the area around I-75 and Rochester roads. Have they not put any water into these watersheds? There is not much of any well use in these areas. I am wondering why I get those results. Could you look into this and get back to me? Thanks.

Response: The problem is with the Foxfire browser being used. When MS Internet Explorer is used the WWAT works fine. The browser problem is being addressed.

16. **Comment:** I found a couple typos. On the screening results under test version results, 'farther' should be 'further' and 'July 9. 2009' should be 'July 9, 2009'. All for now! :)

    Response: Thank you for the comment. Typos will be corrected.

17. **Comment:** 1. Help screen takes you to the MSU web site but not to any help for the model. 2. The model does not take into account aquifer type. e.g. I just ran this for a site where the aquifer is confined but the model seems to look at it as unconfined. Warnings ARI D came up for flows as low as 10 gpm.

    Response: Help screens are currently under development. The model does not take into account aquifer confinement. The degree of connection is determined based upon computed values from the well record information in the GWIM data base. Further, the model used in assessing stream impact assumes there is a relatively intimate connection between aquifer and stream. DEQ understands this is frequently not the case. However, it must be remembered the WWAT is a screening tool. Where the proposed withdrawal is identified by the WWAT as a Zone C or Zone D withdrawal, the issue of determining the degree of aquifer connection would be evaluated as part of the site specific review process.

18. **Comment:** 1.I just ran this for a bedrock well which has been demonstrated to be untritiated water and a confined aquifer. The model identifies the ARI as a D. How can this be. Also nearly 100-feet of clay overlie the bedrock and several confining layers of shale exist above the portion of the rock used for a supply. Any hints on how to proceed?

    Response: The bedrock is treated differently in various areas of the state based upon the known presence or absence of a connection to the drift. Without a location there is no way to ascertain the nature of the problem. Again, it must be remembered the WWAT is a screening tool. As a Zone D withdrawal, the proposed withdrawal would be evaluated under the site specific review process.

19. **Comment:** On a follow-up on my last message I followed up the confined untritiated bedrock run (got an ARI D) with a glacial run and got no impact. Seems odd doesn't it?

    Response: The characteristics of the aquifer that is being “used” when running the WWAT is a factor in stream flow depletion. The stream flow depletion factor is proportional to aquifer transmissivity and inversely proportional to aquifer thickness. The relationship between the two defines the stream flow depletion factor.

20. **Comment:** The Tool should be adapted to account for the existing baseline capacities within the watersheds, rather than the annual withdrawal quantities reported. The Tool should prevent adverse resource impacts in the event that the existing withdrawals were withdrawn at full capacity. The Tool should protect the established baseline capacity of existing users. In the event that a portion of an existing baseline capacity was unused, and a new applicant was denied permission for a withdrawal by the Tool, the identities and withdrawal quantities currently allotted and desired could be reported to both the existing user and potential user. Site-specific review should be used to address any future withdrawals which would reduce the ability of existing users to make full baseline capacity withdrawals.

    Response: The treatment of baseline capacity, water use and unused baseline capacity is a subject of considerable debate. The Water Resources Conservation Advisory Council has identified this as an issue for which a subcommittee is tasked with investigating and recommending to the legislature how water withdrawal accounting should be conducted. No changes are planned in this arena unless there is future legislative action on the issue.

21. **Comment:** Why can't we print out the run simulations?

    Response: Not sure as to what is meant by this comment. The user is able to print out the results of any WWAT simulation, unless there is perhaps a browser issue preventing execution of the print function.

22. **Comment:** All links within the Screening Results screen should open in new IE windows. Otherwise, there is no way to get back to your results once you click on a link (to the Water Use webpage, for example). Also, why is the Print Report link grayed out?

    Response: Comment taken under advisement - the WWAT is being altered to allow one to go back thru previous screens.

23. **Comment:** This looks to be very useful. The only nagging issue I have with the website is on the address selection page. If a county is selected, such as Kent, and your cursor is dragged over the State map, the county selection changes. If there is a way to lock the selection in (either by selection of the county on the Map or the pull-down menu) this would be better.

    Response: Comment taken under advisement.

24. **Comment:** I tried using Microsoft internet explorer to fix the print issue. It did not work. I still can not print the output.

    Response: There continues to be some issues with browser compatibility. Comment has been taken under advisement.

25. **Comment:** Overall, this tool seems to be very straightforward to use. I was curious about the name of the stream, but realized that if I clicked on the "identify" button, that information would pop up along with other useful info. I think the tool could be improved with specific well information in each area. Little red dots pop up for nearby wells, but there doesn't seem to be a way to get specific information about nearby wells (other than contacting the local Health Department). Thanks,

    Response: Specific well information is available by making the “well layer” active in the layers list at the lower left part of the screen. In fact, information relative to any of the items within the layer list can be made available by checking the item so it appears within the GIS map window and then making the layer active. Use of the “identify” button provides the user access to the information. The stream information as an active layer is a default within the WWAT as the layer must be active to complete a water withdrawal evaluation. Also, some layers may not appear on the screen as they are scale dependent. If the layer is checked and can not be seen the user should use the “zoom in” button in the upper left hand corner to zoom in to a scale at which the desired feature can be seen.

26. **Comment:** I have been adding wells using the WWAT around Cedar Lake (Alcona/Iosco Counties) and have experienced a possible problem. My first entry, no matter what the parameters, always comes up zone D - red. Then I click on the rerun model function, enter the exact same data and get a zone A - green proceed. Why would this happen?

    Response: This problem has been identified as a browser issue, and more specifically a problem that is generally identified with the use of the Firefox browser. Comment has been taken under advisement.

27. **Comment:** A few minutes ago the tool stopped showing the GIS options on the top left corner. Seems to malfunction when I reload the page or start from the main page.

    Response: This problem is also likely a browser issue. Comment has been taken under advisement.

28. **Comment:** When trying to see a new withdrawal in 27n06w sec 20 the model will not complete to give me an answer on a new withdrawal

    Response: There is a problem with adjusted stream segment 12695 that is causing the problem. Comment taken under advisement and a correction will be pursued.

29. **Comment:** Hi, I had the chance to run the assessment tool for the Glen Lake/Crystal River Watershed, specifically the (address provided) in Leelanau County, and was given the green light to extract roughly 240,000 gallons per day or 87,600,000 gallons per year from surface water of Hatlem Creek. The model indicated that I was near the upper limit of the Zone A and allowed me to proceed. At this point, I'm not sure how the process will work once this modeling system becomes mandatory and therefore won't provide any criticisms. However, I will say that as per the MDEQ approved Glen Lake/Crystal River Watershed Management Plan, this type of water withdrawal could and would be disastrous for what is described by the management plan as an "environmentally sensitive area". My hope is there is sufficient oversight done by qualified people during the permitting process.

    Response: The area in question possesses a wealth of surface water and ground water resources. Such areas are frequently capable of sustaining very large ground water withdrawals. As a case in point, the proposed withdrawal of 240,000 gallons/day amounts to a continuous withdrawal of 167 gallons per minute (gpm). The wealth of water resources in the area are such that the source watershed (Hatlem Creek) and the surrounding watersheds considered in the evaluation, possess allowable withdrawals greatly in excess of the proposed withdrawal. The withdrawal would not be expected to have a significant impact on the water resources of the area or cause an adverse resource impact as defined in the water withdrawal legislation.

30. **Comment:** Would like to run the tool to give you feedback, however, it appears to be the real thing ... "You may use this Assessment Tool test site to register a new or increased large quantity withdrawal." and I have no proposed "new or increased withdrawal" and don't want you to think I do. Is there a way to truly "test" the site without registering a withdrawal? Please advise. Thanks.

    Response: The WWAT may be used at any time on a trial basis without any commitment to proposing or registering a new or increased withdrawal.

31. **Comment:** Seems like it is very simple and easy to use.

    Response: Many thanks for the compliment. Comment taken under advisement.

32. **Comment:** I was just testing some of the data and would like to know of what trout streams or water courses are in sec. 14 of Ferris Twp, Montcalm County. My family has lived on this land for over 150 years. The only trout stream that I know of is the Pine River. This would be 3960' ft away, unless your data includes County Drains. If the later is not the case then there is an error in the data for this Twp. and Sec. The only county drain in this sec. is the Ferris Creek drain and this sec.14- would be on the upper end of the reach or the start of the drain. This drain periodically dries up and so does the Clum drain. I can verify that during most of the year no water is in these drains. Don't think many Trout can live like this. Just wanted to know as I tested the assessment tool by placing a well any where in this whole sec. and it says Class D. Just wanted to make sure that the correct data was being used.

    Response: The comment makes reference to only trout streams inferring they are the only waters of the state protected by the water withdrawal legislation. Originally the legislation did target only the prevention of an adverse resource impact to trout streams. However, the legislation included a phased approach wherein eventually the law was to be applicable to all lakes and streams and their associated characteristic fish populations by 2008. The two streams, Clum Drain and Ferris Creek are identified in the water withdrawal assessment as cold transitional

streams with relatively low flows. Cold transitional streams are most susceptible to water use as a small reduction in flow can cause a significant impact to the characteristic fish population. By definition such an impact would be considered an adverse resource impact. Given the stream characterizations the resulting "Zone D" designation by the WWAT appears appropriate. Bear in mind, the WWAT is a screening tool and such a designation might be changed through the site specific review process if the proposed water use were pursued.

33. **Comment:** There are a couple things I have observed with the tool thus far. First, while using the tool in an area of Wexford County, I noticed that I could move well locations in my site area a very short distance (100-200 feet) and go from an A to a D. There was no logical explanation for these results (no difference in distance to streams, no transmissivity changes apparent on the groundwater mapping site etc.). Second, the tool should provide a reason why a C or D rating is given (i.e. what are the main drivers in a C or D rating). Since there are many variables being evaluated by the tool, it would be very helpful to know which ones are the primary reasons for the rating provided. This will help focus the effort to determine the validity of the tools prediction and make sound decisions regarding well/withdrawal placement. Although on the surface this tool is relatively easy to use, its function relies on many-many assumptions. All assumptions made by the tool should be clearly identified for all users to see. Without identifying such assumptions, those users lacking a detailed familiarity with such predictive models may not fully realize the uncertainty in its predictions and therefore develop a false sense of confidence in the tools results. Thanks!

    Response: The WWAT consists of a GIS interface and the interaction of three distinct models dealing with stream flows, fish characterizations and stream depletion calculations. Information on the development and operation of the WWAT and the three models can be obtained on the Water Resources Conservation Advisory Council website at:

    http://www.michigan.gov/dnr/0,1607,7-153-39002_51494-198724--,00.html

34. **Comment:** On the intermittent pumping schedule input screen, it says to hold down CTRL to select multiple months, it needs to be "shift". Other than that, the tool works very nicely.

    Response: The comment has been taken under advisement.

35. **Comment:** As far as I am aware, there are no published reports describing the details of the tool. I know of two USGS reports (Reeves and Hamilton et al) that deal with aspects/components of the tool, but nothing that describes how the tool actually works (assumptions, methods, data sources, verification etc.). As such, we can only provide comments on the interface of the tool. It seems rather limiting to not have this information available for review. Will/when such information will be available? Thanks!

    Response: Reports in addition to the aforementioned have been authored and are in review. They will be made available on the Water Resources Conservation Advisory Council website (see Response to comment 33) upon completion.

36. **Comment:** When entering a withdrawal near Crystal Lake near US 31 and White Lake Drive in the Silver Creek watershed, I noted that a continuous withdrawal of up to 50,000 gpm is passed by the tool in Zone B. If I switch to an intermittent withdrawal as low as 1500 gpm, the tool fails in Zone D. Could you let me know if this is fixed?

    Response: DEQ staff has identified problems with some of the stream segments in the referenced area that are causing problem with the WWAT. Comment has been taken under advisement, the area in question is being reviewed and a correction will be pursued.

37. **Comment:** When using your WWAT, after selecting the "New Withdrawal" button and marking the new spot, nothing happened. According to your directions a window was supposed to pop up so I could register my intentions for a new well. What if anything am I doing incorrectly?

    Response: After clicking on “New Withdrawal” you must go and click a location on the map to activate the water withdrawal assessment process – once activated you should see a place to put in information on the withdrawal. If you are not it may be because you have not disabled your pop-up blocker. There are instructions when you first log on with regards to disabling your pop-up blocker. If your pop-up blocker has been disabled then you may be experiencing a browser incompatibility issue. Work is ongoing to address such problems.

38. **Comment:** For an intermittent withdrawal, is there any way to include the intermittent withdrawal data entered by the user (such as days, hours, months of the year) on the report that comes up after clicking Print Report?

    Response: Screens and report content associated with output from the WWAT are undergoing modifications on an ongoing basis during this trial phase. Comment taken under advisement.

39. **Comment:** Tool seems to work well. What effect would returning the water to the stream after use have on final results? For instance pump from well, use in trout hatchery and immediately return to stream.

    Response: Return flow can have a tempering impact on the effects of a withdrawal. However, this is a contentious issue. As an example, although not the case here the return of warm water to a cold water system could have a deleterious affect on the characteristic fish population. The Water Resources Conservation Advisory Council has been giving some thought to the issue of return flows. It is anticipated they will formulate some consensus on the issue and make recommendation to the legislature on how they should be handled.